

Big Toe, Big Pain

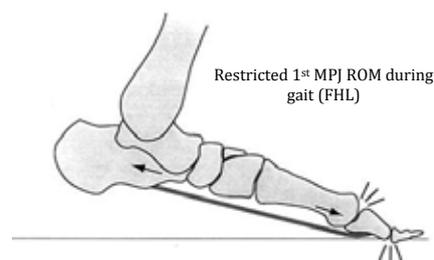
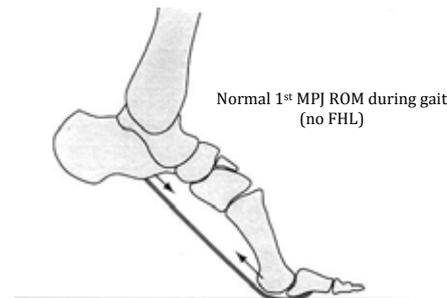
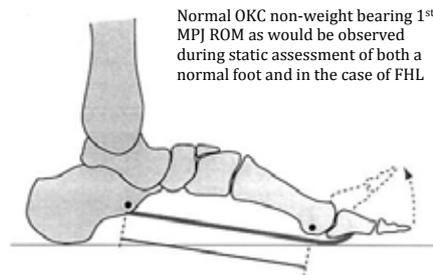
As the largest joint in the forefoot, the 1st Metatarsal-Phalangeal Joint (1st MPJ) or big toe joint is designed to withstand significant amounts of force, and to facilitate propulsion during both walking and running gait. The structural complexity and functional requirements of the 1st MPJ make it prone to pathology and injury. Whilst runners are more likely to develop overuse injuries, other conditions and pathologies affecting the 1st MPJ can be linked to contributors unrelated to running.

The 1st MPJ functions predominantly in the sagittal plane, performing dorsi-flexion and plantar-flexion. The joint also undergoes a small degree of transverse plane movement, predominantly for stability. Sufficient dorsi-flexion range is critical in 'normal' gait to allow the transfer of propulsive force through the 1st MPJ. Insufficient range of movement (ROM) is often the catalyst for injury development at the 1st MPJ and can also result in abnormal plantar foot pressures and compensatory gait patterns, of which there are many.

Functional Hallux Limitus (FHL) refers to an apparent loss of dorsi-flexion ROM with weight bearing, despite the joint displaying normal ROM in non-weight bearing passive assessments. Unfortunately due to the normal passive ROM that characterises FHL, it will often remain undetected and untreated.

FHL can cause both structural and functional compensations and is a common contributing factor or complication of 1st MPJ pathology and other lower leg and

foot injuries. Assessing static ROM in weight bearing and non-weight bearing, as well as during gait are very important to determine the level of structural damage and functional compensation. FHL is a sagittal plane block (reduced sagittal plane movement), which often results in compensation at other sagittal plane joints including the ankle, knee and hip. As such, FHL can be linked to injuries affecting the hamstrings, calves, achilles, and also the forefoot due to abnormal plantar pressures and force distribution.



Bunions are a common pathology affecting the 1st MPJ. The technical term for a bunion, Hallux Abducto-Valgus (HAV), refers to mal-alignment of the 1st MPJ where the big toe (hallux) deviates towards the lesser toes. HAV is a structural deformity that progressively degrades joint integrity and function. Bony exostosis (growth) around the medial and dorsal 1st MPJ often increases symptoms and pain by reducing both passive and functional ROM. Deformity and exostosis also make footwear choice imperative to reduce pressure on the 1st MPJ, and encourage correct joint movement. FHL and secondary arthritis are common complications of HAV.

Whilst HAV is most common amongst the older population, it can develop in people of all ages and activity levels. Contributing factors include poor footwear choices, inadequate or insufficient support, foot structure and biomechanics, and genetics are known to play a role, particularly in juvenile HAV. Without intervention, HAV results in progressive worsening of the joint's structural integrity and gait compensations. Early management and intervention is most important in reducing complications and maintaining good quality of life. Conservative management with footwear and insole modifications or orthotics is often successful, and surgical intervention is also available.

If you're concerned about your 1st MPJ function and how it relates to your injuries or gait patterns, book an appointment with one of the podiatrists at intraining Running Injury Clinic.

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